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 NEWS  1           Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2           "Ask CAS" for self-help around the clock
 NEWS  3  FEB 27   New STN AnaVist pricing effective March 1, 2006
 NEWS  4  MAY 10   CA/CAplus enhanced with 1900-1906 U.S. patent records
 NEWS  5  MAY 11   KOREAPAT updates resume
 NEWS  6  MAY 19   Derwent World Patents Index to be reloaded and enhanced
 NEWS  7  MAY 30   IPC 8 Rolled-up Core codes added to CA/CAplus and
                   USPATFULL/USPAT2
 NEWS  8  MAY 30   The F-Term thesaurus is now available in CA/CAplus
 NEWS  9  JUN 02   The first reclassification of IPC codes now complete in
                   INPADOC
 NEWS 10  JUN 26   TULSA/TULSA2 reloaded and enhanced with new search and
                   and display fields
 NEWS 11  JUN 28   Price changes in full-text patent databases EPFULL and PCTFULL
 NEWS 12  JUl 11   CHEMSAFE reloaded and enhanced
 NEWS 13  JUl 14   FSTA enhanced with Japanese patents
 NEWS 14  JUl 19   Coverage of Research Disclosure reinstated in DWPI
 NEWS 15  AUG 09   INSPEC enhanced with 1898-1968 archive
 NEWS 16  AUG 28   ADISCTI Reloaded and Enhanced
 NEWS 17  AUG 30   CA(SM)/CAplus(SM) Austrian patent law changes
 NEWS 18  SEP 11   CA/CAplus enhanced with more pre-1907 records
 NEWS 19  SEP 21   CA/CAplus fields enhanced with simultaneous left and right
                   truncation

 NEWS EXPRESS  JUNE 30 CURRENT WINDOWS VERSION IS V8.01b, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 26 JUNE 2006.

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 NEWS LOGIN    Welcome Banner and News Items
 NEWS IPC8     For general information regarding STN implementation of IPC 8
 NEWS X25      X.25 communication option no longer available

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=> file caplus compendex inspec
COST IN U.S. DOLLARS                            SINCE FILE      TOTAL
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FILE 'COMPENDEX' ENTERED AT 13:08:44 ON 21 SEP 2006

FILE 'INSPEC' ENTERED AT 13:08:44 ON 21 SEP 2006


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=> s lab on a chip
L1        4395 LAB ON A CHIP

=> s l1 and actuat?
L2         233 L1 AND ACTUAT?

=> s l2 and cell (8w) lys?
L3           1 L2 AND CELL (8W) LYS?

=> display l3 1 ibib abs
```

L3 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2004:158439 CAPLUS
DOCUMENT NUMBER:	140:334896
TITLE:	Self-Contained, Fully Integrated Biochip for Sample Preparation, Polymerase Chain Reaction Amplification, and DNA Microarray Detection
AUTHOR(S):	Liu, Robin Hui; Yang, Jianing; Lenigk, Ralf; Bonanno, Justin; Grodzinski, Piotr
CORPORATE SOURCE:	Microfluidics Laboratory, Motorola Labs, Tempe, AZ, 85284, USA
SOURCE:	Analytical Chemistry (2004), 76(7), 1824-1831 CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER:	American Chemical Society
DOCUMENT TYPE:	Journal
LANGUAGE:	English

AB A fully integrated biochip device that consists of microfluidic mixers, valves, pumps, channels, chambers, heaters, and DNA microarray sensors was developed to perform DNA anal. of complex biol. sample solns. Sample preparation (including magnetic bead-based cell capture, cell preconcn. and purification, and cell lysis), polymerase chain reaction, DNA hybridization, and electrochem. detection were performed in this fully automated and miniature device. Cavitation microstreaming was implemented to enhance target cell capture from whole blood samples using immunomagnetic beads and accelerate DNA hybridization reaction. Thermally actuated paraffin-based microvalves were developed to regulate flows. Electrochem. pumps and thermopneumatic pumps were integrated on the chip to provide pumping of liquid solns. The device is completely self-contained: no external pressure sources, fluid storage, mech. pumps, or valves are necessary for fluid manipulation, thus eliminating possible sample contamination and simplifying device operation. Pathogenic bacteria detection from approx. milliliters of whole blood samples and single-nucleotide polymorphism anal. directly from diluted blood were demonstrated. The device provides a cost-effective solution to direct sample-to-answer genetic anal. and thus has a potential impact in the fields of point-of-care genetic anal., environmental testing, and biol. warfare agent detection.

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> s ((lab on a chip) or microfluid?)
2 FILES SEARCHED...
L4 19731 ((LAB ON A CHIP) OR MICROFLUID?)

=> s l4 and actuat?
L5 1628 L4 AND ACTUAT?

=> s l5 and cell (8w) lys?
L6 11 L5 AND CELL (8W) LYS?

=> s l5 and lys? (8w) (chamber or zone or module or channel or microchannel or passage)
L7 4 L5 AND LYS? (8W) (CHAMBER OR ZONE OR MODULE OR CHANNEL OR MICRO CHANNEL OR PASSAGE)

=> s l5 and hydrophobic (s) (chamber or zone or module or channel or microchannel or passage)
L8 12 L5 AND HYDROPHOBIC (S) (CHAMBER OR ZONE OR MODULE OR CHANNEL OR MICROCHANNEL OR PASSAGE)

=> s l8 and l6
L9 0 L8 AND L6

=> s l8 and l7
L10 0 L8 AND L7

=> display l6 1-11 ibib abs

L6 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1183689 CAPLUS
DOCUMENT NUMBER: 144:493036
TITLE: Novel microsystem applications with new techniques in low-temperature co-fired ceramics
AUTHOR(S): Peterson, K. A.; Patel, K. D.; Ho, C. K.; Rohde, S. B.; Nordquist, C. D.; Walker, C. A.; Wroblewski, B. D.; Okandan, M.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, 87185-0959, USA
SOURCE: International Journal of Applied Ceramic Technology (2005), 2(5), 345-363
CODEN: IJACCP; ISSN: 1546-542X
PUBLISHER: Blackwell Publishing, Inc.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. Low-temperature co-fired ceramic (LTCC) enables development and testing of critical elements on microsystem boards as well as nonmicroelectronic meso-scale applications. We describe silicon-based microelectromech. systems packaging and LTCC meso-scale applications. Microfluidic interposers permit rapid testing of varied silicon designs. The application of LTCC to micro-high-performance liquid chromatog. (μ-HPLC) demonstrates performance advantages at very high pressures. At intermediate pressures, a ceramic thermal cell lyser has lysed bacteria spores without damaging the proteins. The stability and sensitivity of LTCC/chemiresistor smart channels are comparable to the performance of silicon-based chemiresistors. A variant of the use of sacrificial volume materials has created channels, suspended thick films, cavities, and techniques for pressure and flow sensing. We report on inductors, diaphragms, cantilevers, antennae, switch structures, and thermal sensors suspended in air. The development of "functional-as-released" moving parts has

resulted in wheels, impellers, tethered plates, and related new LTCC mech. roles for actuation and sensing. High-temperature metal-to-LTCC joining has been developed with metal thin films for the strong, hermetic interfaces necessary for pins, leads, and tubes.

REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:419566 CAPLUS

TITLE: A microfluidic mammalian cell sorter based on fluorescence detection

AUTHOR(S): Studer, V.; Jameson, R.; Pellereau, E.; Pepin, A.; Chen, Y.

CORPORATE SOURCE: CNRS, Laboratoire de Photonique et de Nanostructures, Marcoussis, 91460, Fr.

SOURCE: Microelectronic Engineering (2004), 73-74, 852-857
CODEN: MIENEF; ISSN: 0167-9317

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB We report on the development of microfluidic devices for single mammalian cell sorting and manipulation. These microfluidic devices are fabricated out of polydimethylsiloxane (PDMS) by multilayer soft lithog. They consist of several active units (mixer, pumps) pneumatically actuated by monolithic soft microvalves. Using this fabrication method we were able to develop a microfluidic device for the fast sorting of 10 μm diameter fluorescently tagged rare objects (mammalian cells or beads) sparsely distributed within a concentrated solution of non-tagged objects. We show that once sorted, these objects can be individually recovered in a small volume (nanolitre range) for further biochem. assays such as cell lysis, mRNA extraction and polymerase chain reaction.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:158439 CAPLUS

DOCUMENT NUMBER: 140:334896

TITLE: Self-Contained, Fully Integrated Biochip for Sample Preparation, Polymerase Chain Reaction Amplification, and DNA Microarray Detection

AUTHOR(S): Liu, Robin Hui; Yang, Jianing; Lenigk, Ralf; Bonanno, Justin; Grodzinski, Piotr

CORPORATE SOURCE: Microfluidics Laboratory, Motorola Labs, Tempe, AZ, 85284, USA

SOURCE: Analytical Chemistry (2004), 76(7), 1824-1831
CODEN: ANCHAM; ISSN: 0003-2700

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A fully integrated biochip device that consists of microfluidic mixers, valves, pumps, channels, chambers, heaters, and DNA microarray sensors was developed to perform DNA anal. of complex biol. sample solns. Sample preparation (including magnetic bead-based cell capture, cell preconcn. and purification, and cell lysis), polymerase chain reaction, DNA hybridization, and electrochem. detection were performed in this fully automated and miniature device. Cavitation microstreaming was implemented to enhance target cell capture from whole blood samples using immunomagnetic beads and accelerate DNA hybridization reaction. Thermally actuated paraffin-based microvalves were developed to regulate flows. Electrochem. pumps and thermopneumatic pumps were integrated on the chip to provide pumping of liquid solns. The device is completely self-contained: no external pressure sources, fluid storage, mech. pumps, or valves are necessary for fluid manipulation, thus

eliminating possible sample contamination and simplifying device operation. Pathogenic bacteria detection from approx. milliliters of whole blood samples and single-nucleotide polymorphism anal. directly from diluted blood were demonstrated. The device provides a cost-effective solution to direct sample-to-answer genetic anal. and thus has a potential impact in the fields of point-of-care genetic anal., environmental testing, and biol. warfare agent detection.

REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:755112 CAPLUS
DOCUMENT NUMBER: 137:244272
TITLE: Methods and systems for releasing intracellular material from cells within microfluidic samples of fluids
INVENTOR(S): Wu, Betty; Ganesan, Karthik; Handique, Kalyan; Parunak, Gene
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 26 pp., Cont.-in-part of U.S. Ser. No. 953,921.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002142482	A1	20021003	US 2001-14519	20011214
US 2002143437	A1	20021003	US 2001-819105	20010328
US 7010391	B2	20060307		
US 2002142471	A1	20021003	US 2002-75371	20020215
WO 2003012406	A1	20030213	WO 2002-US9440	20020327
WO 2003012406	C2	20030320		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1438567	A1	20040721	EP 2002-715213	20020327
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004537695	T2	20041216	JP 2003-517479	20020327

PRIORITY APPLN. INFO.:

US 2001-819105	A2	20010328
US 2001-307638P	P	20010726
US 2001-953921	A2	20010918
US 2001-14519	A2	20011214
US 2001-14520	A	20011214
US 2002-75371	A	20020215
WO 2002-US9440	W	20020327
WO 2002-US9441	W	20020327

AB The present invention relates to a microfluidic system for processing a cell-containing liquid The system includes a lysing zone to receive the cell-containing sample and a positioning element to position the cell-containing sample in a lysing position in the vicinity of a lysing mechanism. The lysing mechanism releases intracellular material, such as DNA or RNA, from the cells. In one embodiment, the lysing mechanism includes electrodes for generating an elec. field sufficient to release intracellular contents from the cells.

Alternatively, the lysing mechanism may lyse the cells using chemical, heat and/or ultrasonic techniques or any combination of these techniques.

L6 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:911150 CAPLUS
DOCUMENT NUMBER: 134:58362
TITLE: Operation of an analytical chip, suitable for biochemical molecules
INVENTOR(S): Colin, Bruno; Dachaud, Jacques; Privat, Marie; Paris, Cecile
PATENT ASSIGNEE(S): Biomerieux S.A., Fr.
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000078452	A1	20001228	WO 2000-FR1718	20000621
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
FR 2795518	A1	20001229	FR 1999-8117	19990622
FR 2795518	B1	20011221		
CA 2376782	AA	20001228	CA 2000-2376782	20000621
EP 1187678	A1	20020320	EP 2000-951631	20000621
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, IE, SI, LT, LV, FI, RO				
JP 2003502653	T2	20030121	JP 2001-504505	20000621
AU 765800	B2	20031002	AU 2000-64508	20000621
US 2006078466	A1	20060413	US 2005-251758	20051018

PRIORITY APPLN. INFO.:

FR 1999-8117	A	19990622
WO 2000-FR1718	W	20000621
US 2001-9848	B1	20011213

AB An anal. chip applicable in the field of microfluidics is described for conducting parallel and/or series reaction processes with fluid transfers performed under internal control, e.g., using equidistant actuators for each reaction chain. The chip is suitable for anal. of biochem. mols., in particular, for DNA and/or RNA denaturation, capture on magnetic particles, amplification and hybridization. The device can be used for cell lysis and sample extraction
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 11 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2005(49):77 COMPENDEX
TITLE: Novel microsystem applications with new techniques in low-temperature co-fired ceramics.
AUTHOR: Peterson, K.A. (Sandia National Laboratories, Albuquerque, NM 87185-0959, United States); Patel, K.D.; Ho, C.K.; Rohde, S.B.; Nordquist, C.D.; Walker, C.A.; Wroblewski, B.D.; Okandan, M.
SOURCE: International Journal of Applied Ceramic Technology v 2 n 5 2005.p 345-363
ISSN: 1546-542X
PUBLICATION YEAR: 2005

DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental; Application
LANGUAGE: English
AN 2005(49):77 COMPENDEX
AB Low-temperature co-fired ceramic (LTCC) enables development and testing of critical elements on microsystem boards as welt as nonmicroelectronic meso-scale applications. We describe silicon-based microelectromechanical systems packaging and LTCC meso-scale applications. Microfluidic interposers permit rapid testing of varied silicon designs. The application of LTCC to micro-high-performance liquid chromatography (y-HPLC) demonstrates performance advantages at very high pressures. At intermediate pressures, a ceramic thermal cell lyser has lysed bacteria spores without damaging the proteins. The stability and sensitivity of LTCC/chemiresistor smart channels are comparable to the performance of silicon-based chemiresistors. A variant of the use of sacrificial volume materials has created channels, suspended thick films, cavities, and techniques for pressure and flow sensing. We report on inductors, diaphragms, cantilevers, antennae, switch structures, and thermal sensors suspended in air. The development of "functional-as-released" moving parts has resulted in wheels, impellers, tethered plates, and related new LTCC mechanical roles for actuation and sensing. High-temperature metal-to-LTCC joining has been developed with metal thin films for the strong, hermetic interfaces necessary for pins, leads, and tubes. $CPY 2005 The American Ceramic Society. 57 Refs.

L6 ANSWER 7 OF 11 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2004(24):9338 COMPENDEX
TITLE: A microfluidic mammalian cell sorter based on fluorescence detection.
AUTHOR: Studer, V. (Lab. de Photon. et de Nanostructures CNRS, 91460 Marcoussis, France); Jameson, R.; Pellereau, E.; Pepin, A.; Chen, Y.
MEETING TITLE: Micro and Nano Engineering 2003.
MEETING LOCATION: Cambridge, United Kingdom
MEETING DATE: 22 Sep 2003-25 Sep 2003
SOURCE: Microelectronic Engineering v 73-74 June 2004 2004.p 852-857
CODEN: MIENEF ISSN: 0167-9317
PUBLICATION YEAR: 2004
MEETING NUMBER: 62992
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Experimental
LANGUAGE: English
AN 2004(24):9338 COMPENDEX
AB We report on the development of microfluidic devices for single mammalian cell sorting and manipulation. These microfluidic devices are fabricated out of polydimethylsiloxane (PDMS) by multilayer soft lithography. They consist of several active units (mixer, pumps) pneumatically actuated by monolithic soft microvalves. Using this fabrication method we were able to develop a microfluidic device for the fast sorting of 10 mum diameter fluorescently tagged rare objects (mammalian cells or beads) sparsely distributed within a concentrated solution of non-tagged objects. We show that once sorted, these objects can be individually recovered in a small volume (nanolitre range) for further biochemical assays such as cell lysis , mRNA extraction and polymerase chain reaction. $CPY 2004 Published by Elsevier B.V. 7 Refs.

L6 ANSWER 8 OF 11 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2004(18):1438 COMPENDEX
TITLE: Self-Contained, Fully Integrated Biochip for Sample Preparation, Polymerase Chain Reaction Amplification, and DNA Microarray Detection.

AUTHOR: Liu, Robin Hui (Ctr. for Appl. NanoBioscience Center Arizona State University, Tempe, AZ 85287, United States); Yang, Jianing; Lenigk, Ralf; Bonanno, Justin; Grodzinski, Piotr
SOURCE: Analytical Chemistry v 76 n 7 Apr 1 2004 2004.p 1824-1831
CODEN: ANCHAM ISSN: 0003-2700
PUBLICATION YEAR: 2004
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2004(18):1438 COMPENDEX
AB A fully integrated biochip device that consists of microfluidic mixers, valves, pumps, channels, chambers, heaters, and DNA microarray sensors was developed to perform DNA analysis of complex biological sample solutions. Sample preparation (including magnetic bead-based cell capture, cell preconcentration and purification, and cell lysis), polymerase chain reaction, DNA hybridization, and electrochemical detection were performed in this fully automated and miniature device. Cavitation microstreaming was implemented to enhance target cell capture from whole blood samples using immunomagnetic beads and accelerate DNA hybridization reaction. Thermally actuated paraffin-based microvalves were developed to regulate flows. Electrochemical pumps and thermopneumatic pumps were integrated on the chip to provide pumping of liquid solutions. The device is completely self-contained: no external pressure sources, fluid storage, mechanical pumps, or valves are necessary for fluid manipulation, thus eliminating possible sample contamination and simplifying device operation. Pathogenic bacteria detection from approximately milliliters of whole blood samples and single-nucleotide polymorphism analysis directly from diluted blood were demonstrated. The device provides a cost-effective solution to direct sample-to-answer genetic analysis and thus has a potential impact in the fields of point-of-care genetic analysis, environmental testing, and biological warfare agent detection. 50 Refs.

L6 ANSWER 9 OF 11 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2003(24):3679 COMPENDEX
TITLE: Microfluidic devices for cellomics: A review.
AUTHOR: Andersson, Helene (MESA+ Institute University of Twente, 7500 AE Enschede, Netherlands); Van den Berg, Albert
SOURCE: Sensors and Actuators, B: Chemical v 92 n 3 Jul 15 2003 2003.p 315-325
CODEN: SABCEB ISSN: 0925-4005
PUBLICATION YEAR: 2003
DOCUMENT TYPE: Journal
TREATMENT CODE: Bibliography; Theoretical
LANGUAGE: English
AN 2003(24):3679 COMPENDEX
AB A review of microfluidic devices for cellomics is presented. After a brief description of the historical background of Lab-on-Chip (LOC) devices, different areas are reviewed. Devices for cell sampling are presented, followed by cell trapping and cell sorting devices based upon mechanical and electrical principles. Subsequently, a popular type of cell sorters, flow cytometers, is considered, followed by a chapter describing devices for cell treatment: cell lysis, poration/gene transfection and cell fusion devices. Finally a number of microfluidic devices for cellular studies are reviewed. The large amount of very recent publications treated in this review indicates the rapidly growing interest in this exciting application area of LOC. $CPY 2003 Elsevier Science B.V. All rights reserved. 95 Refs.

L6 ANSWER 10 OF 11 INSPEC (C) 2006 IET on STN

ACCESSION NUMBER: 2004:8137012 INSPEC
DOCUMENT NUMBER: A2004-23-8725-003; B2004-11-2575-035; C2004-11-3260P-015
TITLE: A microfluidic mammalian cell sorter based on fluorescence detection
AUTHOR: Studer, V.; Jameson, R.; Pellereau, E.; Pepin, A.; Chen, Y. (Lab. de Photonique et de Nanostruct., CNRS, Marcoussis, France)
SOURCE: Microelectronic Engineering (June 2004), vol.73-74, p. 852-7, 7 refs.
CODEN: MIENEF, ISSN: 0167-9317
SICI: 0167-9317(200406)73/74L.852:MMCS;1-C
Price: 0167-9317/04/$30.00
Published by: Elsevier, Netherlands
Conference: 29th International Conference on Micro and Nano Engineering, Cambridge, UK, 22-25 Sept. 2003
DOCUMENT TYPE: Conference; Conference Article; Journal
TREATMENT CODE: Practical; Experimental
COUNTRY: Netherlands
LANGUAGE: English
AN 2004:8137012 INSPEC DN A2004-23-8725-003; B2004-11-2575-035; C2004-11-3260P-015
AB We report on the development of microfluidic devices for single mammalian cell sorting and manipulation. These microfluidic devices are fabricated out of polydimethylsiloxane (PDMS) by multilayer soft lithography. They consist of several active units (mixer, pumps) pneumatically actuated by monolithic soft microvalves. Using this fabrication method we have been able to develop a microfluidic device for the fast sorting of 10 μm diameter fluorescently tagged rare objects (mammalian cells or beads) sparsely distributed within a concentrated solution of non-tagged objects. We show that once sorted, these objects can be individually recovered in a small volume (nanolitre range) for further biochemical assays such as cell lysis, mRNA extraction and polymerase chain reaction

L6 ANSWER 11 OF 11 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2002:7328386 INSPEC
DOCUMENT NUMBER: B2002-08-8380M-027; C2002-08-3260P-032
TITLE: An in-plane active magnetic mixer for microfluidic applications
AUTHOR: Mensing, G.; Pearce, T.; Beebe, D.J. (Dept. of Biomed. Eng., Wisconsin Univ., Madison, WI, USA)
SOURCE: 2nd Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology. Proceedings (Cat. No.02EX578), 2002, p. 531-4 of xix+568 pp., 13 refs., Also available on CD-ROM in PDF format
Editor(s): Dittmar, A.; Beebe, D.
ISBN: 0 7803 7480 0
Price: 0-7803-7480-0/02/$17.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2nd Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology. Proceedings, Madison, WI, USA, 2-4 May 2002
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7328386 INSPEC DN B2002-08-8380M-027; C2002-08-3260P-032
AB We report the properties of a magnetically actuated mixing and blending device that is fabricated using microfluidic tectonics methods. A small metal blade is confined within a microfluidic channel. A post is polymerized through a hole in the blade to hold it in

place and allow it to spin freely when a common magnetic stirrer is activated. The moving blade allows fluid streams to mix. The blade can also be used to break up biological materials inside a microchannel

=> display l7 1-4 ibib abs

L7 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:672770 CAPLUS
DOCUMENT NUMBER: 143:152013
TITLE: Microfluidic chemostat
INVENTOR(S): Balagadde, Frederick; Hansen, Carl L.; Kartalov, Emil; Quake, Stephen R.
PATENT ASSIGNEE(S): California Institute of Technology, USA
SOURCE: U.S. Pat. Appl. Publ., 63 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005164376	A1	20050728	US 2004-12852	20041214
WO 2005069980	A2	20050804	WO 2005-US211	20050105
WO 2005069980	A3	20050929		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2004-536863P P 20040116
US 2004-12852 A 20041214

AB A chemostat that includes a growth chamber having a plurality of compartments, where each of the compartments may be fluidly isolated from the rest of the growth chamber by one or more actuatable valves. The chemostat may also include a nutrient supply-line to supply growth medium to the growth chamber, and an output port to remove fluids from the growth chamber. Also, a method of preventing biofilm formation in a growth chamber of a chemostat. The method may include the steps of adding a lysis agent to a isolated portion of the growth chamber, and reuniting the isolated portion with the rest of the growth chamber.

L7 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:120802 CAPLUS
DOCUMENT NUMBER: 142:193900
TITLE: Microfluidic device for processing particle-containing liquid samples
INVENTOR(S): Wu, Betty; Handique, Kalyan; Parunak, Gene; Kehrer, Aaron; Ganesan, Karthik
PATENT ASSIGNEE(S): Handylab, Inc., USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005011867	A2	20050210	WO 2004-US25181	20040802
WO 2005011867	A3	20050421		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1654066	A2	20060510	EP 2004-780082	20040802

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

US 2006205085	A1	20060914	US 2006-567002	20060131

PRIORITY APPLN. INFO.:			
US 2003-491269P	P	20030731	
US 2004-551785P	P	20040311	
US 2004-553553P	P	20040317	
WO 2004-US25181	W	20040802	

AB A microfluidic device includes an input port for inputting particle-containing liquidic samples into the device, a retention member, and a pressure actuator. The retention member is in communication with the input port and is configured to spatially sep. particles of the particle-containing liquidic sample from a first portion of the liquid of the particle containing fluidic sample. The pressure actuator recombines at least some of the separated particles with a subset of the first portion of the liquid separated from the particles. The device can also include a lysing chamber that receives the particles and liquid from the retention member. The lysing chamber thermally lyses the particles to release contents thereof. Streptococcus group B samples were added to Triton X-1000 buffer, filtered through a polycarbonate filter, and lysed at 97° for 3 min. DNA of samples was analyzed by PCR.

L7 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER:	2002:755112 CAPLUS
DOCUMENT NUMBER:	137:244272
TITLE:	Methods and systems for releasing intracellular material from cells within microfluidic samples of fluids
INVENTOR(S):	Wu, Betty; Ganesan, Karthik; Handique, Kalyan; Parunak, Gene
PATENT ASSIGNEE(S):	USA
SOURCE:	U.S. Pat. Appl. Publ., 26 pp., Cont.-in-part of U.S. Ser. No. 953,921. CODEN: USXXCO
DOCUMENT TYPE:	Patent
LANGUAGE:	English
FAMILY ACC. NUM. COUNT:	8

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002142482	A1	20021003	US 2001-14519	20011214
US 2002143437	A1	20021003	US 2001-819105	20010328
US 7010391	B2	20060307		
US 2002142471	A1	20021003	US 2002-75371	20020215
WO 2003012406	A1	20030213	WO 2002-US9440	20020327

WO 2003012406 C2 20030320
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
EP 1438567 A1 20040721 EP 2002-715213 20020327
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
JP 2004537695 T2 20041216 JP 2003-517479 20020327
PRIORITY APPLN. INFO.: US 2001-819105 A2 20010328
US 2001-307638P P 20010726
US 2001-953921 A2 20010918
US 2001-14519 A2 20011214
US 2001-14520 A 20011214
US 2002-75371 A 20020215
WO 2002-US9440 W 20020327
WO 2002-US9441 W 20020327

AB The present invention relates to a microfluidic system for processing a cell-containing liquid The system includes a lysing zone to receive the cell-containing sample and a positioning element to position the cell-containing sample in a lysing position in the vicinity of a lysing mechanism. The lysing mechanism releases intracellular material, such as DNA or RNA, from the cells. In one embodiment, the lysing mechanism includes electrodes for generating an elec. field sufficient to release intracellular contents from the cells. Alternatively, the lysing mechanism may lyse the cells using chemical, heat and/or ultrasonic techniques or any combination of these techniques.

L7 ANSWER 4 OF 4 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2002:7328386 INSPEC
DOCUMENT NUMBER: B2002-08-8380M-027; C2002-08-3260P-032
TITLE: An in-plane active magnetic mixer for microfluidic applications
AUTHOR: Mensing, G.; Pearce, T.; Beebe, D.J. (Dept. of Biomed. Eng., Wisconsin Univ., Madison, WI, USA)
SOURCE: 2nd Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology. Proceedings (Cat. No.02EX578), 2002, p. 531-4 of xix+568 pp., 13 refs., Also available on CD-ROM in PDF format
Editor(s): Dittmar, A.; Beebe, D.
ISBN: 0 7803 7480 0
Price: 0-7803-7480-0/02/$17.00
Published by: IEEE, Piscataway, NJ, USA
Conference: 2nd Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine and Biology. Proceedings, Madison, WI, USA, 2-4 May 2002
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Application; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2002:7328386 INSPEC DN B2002-08-8380M-027; C2002-08-3260P-032

AB We report the properties of a magnetically actuated mixing and blending device that is fabricated using microfluidic tectonics methods. A small metal blade is confined within a microfluidic channel. A post is polymerized through a hole in the blade to hold it in place and allow it to spin freely when a common magnetic stirrer is activated. The moving blade allows fluid streams to mix. The blade can also be used to break up biological materials inside a microchannel

=> display l8 1-12 ibib abs

L8 ANSWER 1 OF 12 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:788550 CAPLUS
TITLE: Integrated polymerase chain reaction chips utilizing digital microfluidics
AUTHOR(S): Chang, Yi-Hsien; Lee, Gwo-Bin; Huang, Fu-Chun; Chen, Yi-Yu; Lin, Jr-Lung
CORPORATE SOURCE: Department of Engineering Science, National Cheng Kung University, Tainan, 701, Taiwan
SOURCE: Biomedical Microdevices (2006), 8(3), 215-225
CODEN: BMICFC; ISSN: 1387-2176
PUBLISHER: Springer
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This study reports an integrated microfluidic chip for polymerase chain reaction (PCR) applications utilizing digital microfluidic chip (DMC) technol. Several crucial procedures including sample transportation, mixing, and DNA amplification were performed on the integrated chip using electro-wetting-on-dielec. (EWOD) effect. An innovative concept of hydrophobic/hydrophilic structure has been successfully demonstrated to integrate the DMC chip with the on-chip PCR device. Sample droplets were generated, transported and mixed by the EWOD-actuation. Then the mixture droplets were transported to a PCR chamber by utilizing the hydrophilic/hydrophobic interface to generate required surface tension gradient. A micro temperature sensor and two micro heaters inside the PCR chamber along with a controller were used to form a micro temperature control module, which could perform precise PCR thermal cycling for DNA amplification. In order to demonstrate the performance of the integrated DMC/PCR chips, a detection gene for Dengue II virus was successfully amplified and detected. The new integrated DMC/PCR chips only required an operation voltage of 12VRMS at a frequency of 3 KHz for digital microfluidic actuation and 9VDC for thermal cycling. When compared to its large-scale counterparts for DNA amplification, the developed system consumed less sample and reagent and could reduce the detection time. The developed chips successfully demonstrated the feasibility of Lab-On-a-Chip (LOC) by utilizing EWOD-based digital microfluidics.

L8 ANSWER 2 OF 12 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:470975 CAPLUS
DOCUMENT NUMBER: 145:10206
TITLE: A capillary system with thermal-bubble-actuated 1 + N microfluidic switches via time-sequence power control for continuous liquid handling
AUTHOR(S): Cheng, Chih-Ming; Liu, Cheng-Hsien
CORPORATE SOURCE: Micro-Systems and Control Laboratory, Department of Power Mechanical Engineering, National Tsing-Hua University, Hsinchu, 30043, Taiwan
SOURCE: Journal of Microelectromechanical Systems (2006), 15(2), 296-307
CODEN: JMIYET; ISSN: 1057-7157
PUBLISHER: Institute of Electrical and Electronics Engineers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A novel thermal-bubble-actuated 1 + N microfluidic switch without the need of external pumps was successfully fabricated using micromachining process and demonstrated. This device is a valveless switch by means of the triggering thermal-bubble-actuator, the capillary force, the design of the distributed hydrophobic

patches in the microchannels, and the time-sequence power control. The switch mechanism among different microchannels in the device is dominated by controlling the format and timing of power input that generates actuating thermal bubbles. The exptl. results successfully and robustly demonstrate the switch function of the microcapillary systems to switch continuous liquid into desired outlet ports based on the hydrophobic-patch design and programmable time-sequence bubble actuation. In this paper, the theory, design, synthesis, micromachining process, control circuitry, and its time-sequence control, as well as the exptl. demonstration of this microcapillary system are described.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 12 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:364647 CAPLUS
DOCUMENT NUMBER: 140:425296
TITLE: Ferrofluid-based microchip pump and valve
AUTHOR(S): Hartshorne, Herb; Backhouse, Christopher J.; Lee, William E.
CORPORATE SOURCE: Micralyne Inc., Edmonton, AB, 1911-94, Can.
SOURCE: Sensors and Actuators, B: Chemical (2004), B99(2-3), 592-600
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Fluid control is a key element in the performance of microfluidic "lab-on-a-chip" devices. The development of integrated multi-function micro-chemical reactors and anal. platforms depends upon on-chip valving and pumping. In this work, microfluidic valves and pumps were fabricated from etched glass substrates each bonded to a second glass substrate lid that had ultrasonically drilled access holes. The devices contained ferrofluid plugs of approx. 10 mm in length that were actuated by external magnets. The ferrofluid used in the devices was a colloidal suspension of ferromagnetic particles in a hydrophobic fluorocarbon carrier and was immiscible in water. With air in the channels, ferrofluid devices could withstand pressures of 12 kPa and could be opened and closed against pressures of 8.5 and 5.0 kPa, resp., under a magnetic field of 2.8 kG. A ferrofluid pump comprising a ferrofluid piston and two ferrofluid valves was able to generate air pressures in excess of 5 kPa. In untreated glass channels, leakage of water around ferrofluid seals was significant. However, when the portions of the channel network that contained the ferrofluid were coated with a hydrophobic organo-silane, leakage was not detectable.

REFERENCE COUNT: 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 12 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2002:294281 CAPLUS
TITLE: Electrostatic actuators for microfluidics and methods for using same
INVENTOR(S): Shenderov, Alexander
PATENT ASSIGNEE(S): Nanolytics, Inc., USA
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002043463	A1	20020418	US 2001-943675	20010830

US 6773566 B2 20040810
PRIORITY APPLN. INFO.: US 2000-229420P P 20000831
AB An apparatus for inducing movement of an electrolytic droplet includes: a housing having an internal volume filled with a liquid immiscible with an electrolytic droplet; a distribution plate positioned within the chamber having an aperture and dividing the housing into upper and lower chambers; a lower electrode positioned below the lower chamber and the aperture in the distribution plate and being separated from the lower chamber by an overlying hydrophobic insulative layer; an upper electrode located above the upper chamber and the aperture of the distribution plate and being separated from the upper chamber by an underlying hydrophobic insulative layer; and first, second and third voltage generators that are electrically connected to, respectively, the lower and upper electrodes and the distribution plate. The voltage generators are configured to apply electrical potentials to the lower and upper electrodes and the distribution plate, thereby inducing movement of the electrolytic droplet between the hydrophobic layers.
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 12 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2001:851492 CAPLUS
DOCUMENT NUMBER: 135:368904
TITLE: Structurally programmable microfluidic device used as a biochip for biochemical analysis
INVENTOR(S): Ahn, Chong H.; Choi, Jin-Woo; Puntambekar, Aniruddha Prakash
PATENT ASSIGNEE(S): University of Cincinnati, USA
SOURCE: PCT Int. Appl., 73 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001088525	A1	20011122	WO 2001-US15304	20010511
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2002023841	A1	20020228	US 2001-871718	20010601

PRIORITY APPLN. INFO.: US 2000-204214P P 20000512
US 2000-209051P P 20000602

AB The invention concerns a structurally programmable microfluidic device used as a biochip to analyze a variety of analytes such as the DNA in blood samples. Further, the inventions microfluidic system, which are structurally programmable (PFD), reconfigurable, and possess multi-sample anal. capabilities. In one embodiment, the device includes structurally programmable fluidic paths, passive microvalves, fluidic components based on hydrophobic microfluidic systems (PFD), and pneumatic actuators using an air-bursting actuation concept. By controlling both the length and surface properties (e.g., hydrophilic or hydrophobic) of the channels, the pressure drops through the designed microfluidic systems will be controlled and thus programmable. Diagrams describing the apparatus are given.
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 12 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2006(34):2202 COMPENDEX
TITLE: Integrated polymerase chain reaction chips utilizing digital microfluidics.
AUTHOR: Chang, Yi-Hsien (Department of Engineering Science National Cheng Kung University, Tainan 701, Taiwan); Lee, Gwo-Bin; Huang, Fu-Chun; Chen, Yi-Yu; Lin, Jr-Lung
SOURCE: Biomedical Microdevices v 8 n 3 September 2006 2006.p 215-225
CODEN: BMICFC ISSN: 1387-2176
PUBLICATION YEAR: 2006
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2006(34):2202 COMPENDEX
AB This study reports an integrated microfluidic chip for polymerase chain reaction (PCR) applications utilizing digital microfluidic chip (DMC) technology. Several crucial procedures including sample transportation, mixing, and DNA amplification were performed on the integrated chip using electro-wetting-on-dielectric (EWOD) effect. An innovative concept of hydrophobic/hydrophilic structure has been successfully demonstrated to integrate the DMC chip with the on-chip PCR device. Sample droplets were generated, transported and mixed by the EWOD-actuation. Then the mixture droplets were transported to a PCR chamber by utilizing the hydrophilic/ hydrophobic interface to generate required surface tension gradient. A micro temperature sensor and two micro heaters inside the PCR chamber along with a controller were used to form a micro temperature control module, which could perform precise PCR thermal cycling for DNA amplification. In order to demonstrate the performance of the integrated DMC/PCR chips, a detection gene for Dengue II virus was successfully amplified and detected. The new integrated DMC/PCR chips only required an operation voltage of 12VRMS at a frequency of 3 KHz for digital microfluidic actuation and 9VDC for thermal cycling. When compared to its large-scale counterparts for DNA amplification, the developed system consumed less sample and reagent and could reduce the detection time. The developed chips successfully demonstrated the feasibility of Lab-On-a-Chip (LOC) by utilizing EWOD-based digital microfluidics. $CPY Springer Science + Business Media, LLC 2006. 47 Refs.

L8 ANSWER 7 OF 12 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2006(17):12103 COMPENDEX
TITLE: A capillary system with thermal-bubble-actuated 1 * N microfluidic switches via time-sequence power control for continuous liquid handling.
AUTHOR: Cheng, Chih-Ming (Micro-Systems and Control Laboratory Department of Power Mechanical Engineering National Tsing-Hua University, Hsinchu 30043, Taiwan); Liu, Cheng-Hsien
SOURCE: Journal of Microelectromechanical Systems v 15 n 2 April 2006 2006.p 296-307
CODEN: JMIYET ISSN: 1057-7157
PUBLICATION YEAR: 2006
DOCUMENT TYPE: Journal
TREATMENT CODE: Theoretical; Experimental
LANGUAGE: English
AN 2006(17):12103 COMPENDEX
AB A novel thermal-bubble-actuated 1 * N microfluidic switch without the need of external pumps has been successfully fabricated

using micromachining process and demonstrated. This device is a valveless switch by means of the triggering thermal-bubble-actuator, the capillary force, the design of the distributed hydrophobic patches in the microchannels, and the time-sequence power control. The switch mechanism among different microchannels in our device is dominated by controlling the format and timing of power input that generates actuating thermal bubbles. The experimental results successfully and robustly demonstrate the switch function of our microcapillary systems to switch continuous liquid into desired outlet ports based on our hydrophobic-patch design and programmable time-sequence bubble actuation. In this paper, we describe the theory, design, synthesis, micromachining process, control circuitry, and its time-sequence control, as well as the experimental demonstration of this microcapillary system. $CPY 2006 IEEE. 26 Refs.

L8 ANSWER 8 OF 12 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2004(45):6036 COMPENDEX
TITLE: An effective passive micromixer employing herringbone structure.
AUTHOR: Kung, Chun-Fei; Chen, Chien-Fu; Chu, Chin-Chou; Tseng, Fan-Gang
MEETING TITLE: 2004 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2004.
MEETING LOCATION: Boston, MA, United States
SOURCE: 2004 NSTI Nanotechnology Conference and Trade Show - NSTI Nanotech 2004 v 1 2004.p 312-315
ISBN: 0972842276
PUBLICATION YEAR: 2004
MEETING NUMBER: 63724
DOCUMENT TYPE: Conference Article
TREATMENT CODE: Theoretical
LANGUAGE: English
AN 2004(45):6036 COMPENDEX
AB This paper proposes a high efficient micro mixer, passively employing surface tension force as driving power and Herringbone structures as vortex generator for fluid mixing. The fluidic channel was designed without sidewall and confined with only the bottom hydrophilic and top hydrophobic surface for later-on mixing process among channels. Besides, in order to increase the mixing efficiency, herringbone-like structures are arranged on the bottom of the channel to enforce liquids to produce three-dimensional low automatically. The fabrication has been completed successfully, and the testing result demonstrated 5 times higher mixing rate in 15mm mixing range. This device is anticipated to be batch-fabricated and applied to power-free mu TAS or lab-on a-chip system in the future. 8 Refs.

L8 ANSWER 9 OF 12 COMPENDEX COPYRIGHT 2006 EEI on STN
ACCESSION NUMBER: 2004(22):2211 COMPENDEX
TITLE: Ferrofluid-based microchip pump and valve.
AUTHOR: Hartshorne, Herb (Micralyne Inc., Edmonton, Alta. T6N 1E6, Canada); Backhouse, Christopher J.; Lee, William E.
SOURCE: Sensors and Actuators, B: Chemical v 99 n 2-3 May 1 2004 2004.p 592-600
CODEN: SABCEB ISSN: 0925-4005
PUBLICATION YEAR: 2004
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
LANGUAGE: English
AN 2004(22):2211 COMPENDEX
AB Fluid control is a key element in the performance of microfluidic "lab-on-a-chip" devices. The development of integrated multi-function micro-chemical reactors and analysis platforms

depends upon on-chip valving and pumping. In this work, microfluidic valves and pumps were fabricated from etched glass substrates each bonded to a second glass substrate lid that had ultrasonically drilled access holes. The devices contained ferrofluid plugs of approximately 10mm in length that were actuated by external magnets. The ferrofluid used in the devices was a colloidal suspension of ferromagnetic particles in a hydrophobic fluorocarbon carrier and was immiscible in water. With air in the channels, ferrofluid devices could withstand pressures of 12kPa and could be opened and closed against pressures of 8.5 and 5.0kPa, respectively, under a magnetic field of 2.8kG. A ferrofluid pump comprising a ferrofluid piston and two ferrofluid valves was able to generate air pressures in excess of 5kPa. In untreated glass channels, leakage of water around ferrofluid seals was significant. However, when the portions of the channel network that contained the ferrofluid were coated with a hydrophobic organo-silane, leakage was not detectable. 26 Refs.

L8 ANSWER 10 OF 12 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2006:8882354 INSPEC
TITLE: A capillary system with thermal-bubble-actuated 1+N microfluidic switches via time-sequence power control for continuous liquid handling
AUTHOR: Chih-Ming Cheng; Cheng-Hsien Liu (Dept. of Power Mech. Eng., Nat. Tsing-Hua Univ., Hsinchu, Taiwan)
SOURCE: Journal of Microelectromechanical Systems (April 2006), vol.15, no.2, p. 296-307, 26 refs.
CODEN: JMIYET, ISSN: 1057-7157
SICI: 1057-7157(200604)15:2L.296:CSWT;1-O
Price: 1057-7157/$20.00
Published by: IEEE, USA
DOCUMENT TYPE: Journal
TREATMENT CODE: New Development; Practical
COUNTRY: United States
LANGUAGE: English
AN 2006:8882354 INSPEC
AB A novel thermal-bubble-actuated 1+N microfluidic switch without the need of external pumps has been successfully fabricated using micromachining process and demonstrated. This device is a valveless switch by means of the triggering thermal-bubble-actuator, the capillary force, the design of the distributed hydrophobic patches in the microchannels, and the time-sequence power control. The switch mechanism among different microchannels in our device is dominated by controlling the format and timing of power input that generates actuating thermal bubbles. The experimental results successfully and robustly demonstrate the switch function of our microcapillary systems to switch continuous liquid into desired outlet ports based on our hydrophobic-patch design and programmable time-sequence bubble actuation. In this paper, we describe the theory, design, synthesis, micromachining process, control circuitry, and its time-sequence control, as well as the experimental demonstration of this microcapillary system

L8 ANSWER 11 OF 12 INSPEC (C) 2006 IET on STN
ACCESSION NUMBER: 2005:8651243 INSPEC
TITLE: A capillary system with thermal-bubble-actuated 1+N micro flow switch via time-sequence power control for continuous liquid handling
AUTHOR: Chih-Ming Cheng; Cheng-Hsien Liu (Dept. of Power Mech. Eng., Nat. Tsing Hua Univ., Hsinchu, Taiwan)

SOURCE: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers (IEEE Cat. No. 05TH8791), Vol. 1, 2005, p. 660-3 Vol. 1 of 2 vol. (xxxix+2162) pp., 5 refs.
ISBN: 0 7803 8994 8
Price: 0-7803-8994-8/05/$20.00
Published by: IEEE, Piscataway, NJ, USA
Conference: TRANSDUCERS '05. The 13th International Conference on Solid-State Sensors, Actuators and Microsystems. Digest of Technical Papers, Seoul, South Korea, 5-9 June 2005
Sponsor(s): Korean Sensors Soc
DOCUMENT TYPE: Conference; Conference Article
TREATMENT CODE: Theoretical; Experimental
COUNTRY: United States
LANGUAGE: English
AN 2005:8651243 INSPEC
AB In this paper, we present the design and implementation of a novel thermal-bubble-actuated 1+N micro flow switch without the need of external macro pumps. This device is a valveless switch by means of the thermal-bubble-actuated method and the area control of the hydrophobic patches on the microchannels. The switch mechanism among different microchannels is dominated by controlling the format and timing of power input that generates thermal bubbles. The experimental results successfully demonstrate the switch function of our micro flow switches devices to switch continuous liquid into desired outlet ports based on our hydrophobic-patch design and programmable time-sequence bubble actuation

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AB This paper proposes a novel method to perform micro mixing without any active devices such as pumps, valves, or external energies like electrostatic, or magnetic fields, which may have negative interactions with working fluids. In this novel mixing device, surface tension force from the working fluid is the only energy resource employed passively to transport, merge, mix, and stop liquid automatically by the design of channel structure and surface properties. The fluidic channel was designed without sidewall and confined with only the bottom hydrophilic and top hydrophobic surface for later-on mixing process among channels, and with spiral channel shape for saving space and shortening channel distance to one

another. Fabrication has been completed successfully, and the testing result demonstrated effective fluid flow in spiral channel by surface tension once the liquid is dropped on the entrance, as well as the mixing between two different liquids without extra actuation . This device can be applied to power-free μTAS or lab-on a-chip system